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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,871	04/14/2004	Pan-Tzu Chang	DF-05000	7070

7590 09/29/2005

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT PAPER NUMBER

2815

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/824,871

Applicant(s)

CHANG ET AL.

Examiner

Joseph Nguyen

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-17 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12-15, 17, 19 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen (US 2003/0143772 A1).

Regarding claim 12, Chen discloses in figures 6, in particular figure 6C a light emitting structure, comprising a semiconductor structure for emitting light 104, 106, 108 (para [0023], lines 4-8); a metal bonding layer 124 (para [0028], line 13) on the semiconductor structure; a transparent substrate 120 (para [0028], lines 3-5) formed on said metal bonding layer and bonded with said semiconductor structure; and a first electrode 130 (para [0030], line 3) and a second electrode 122 (para [0028], line 11) respectively formed on said semiconductor structure and said transparent substrate for providing a current to said semiconductor structure.

Note that Chen teaches the substrate is formed of SiC (para [0028], lines 3-5), and applicant teaches that the transparent substrate is formed of SiC (para [0021] of the instant application). Therefore, Chen teaches the transparent substrate. Further, both

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen and further in view of Sheu et al.

Regarding claim 16, Chen teaches that the transparent substrate is SiC (para [0028], lines 3-4). Chen does not teach the transparent substrate is GaP. However, Sheu et al. teaches that the substrate can be SiC or GaP (col. 3, lines 53-54). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by having the transparent substrate being GaP because SiC and GaP are recognized in the art as equivalents.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen.

Regarding claim 20, Chen teaches that the first electrode 130 and the second electrode are respectively an N type electrode and a P type electrode (para [0030], line 3 and para [0028], line 11). Chen does not teach the first electrode and the second electrode are respectively a P type electrode and an N type electrode. However, it is well known in the art that N type and P type can be interchanged, depending merely on certain application of a semiconductor device. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Chen by

Art Unit: 2815

elements 130 and 122 are formed of metal (para [0030], line 3 and para [0028], line 11) and therefore they can function as electrodes. Moreover, since metal 130 functions as n type electrode (in para [0030], line 3, Chen teaches metal 130 is n type ohmic contact, therefore metal 130 can function as n type electrode), metal 122 formed on the lowest end of the semiconductor device, opposite to metal 130, has to function as p type electrode as such the two electrodes can provide a current to the semiconductor structure. Lastly, the limitation "bonding temperature ranged from 300C to 900C" is merely product by process and therefore does not structurally distinguish from Chen.

Regarding claim 13, Chen discloses that said semiconductor structure is a light emitting diode structure (para [0028], line 1).

Regarding claim 14, Chen discloses that said light emitting diode structure is formed by a four-element material of AlGaInP (para [0028], line 1).

Regarding claim 15, Chen discloses that said transparent substrate is one selected from a group consisting of SiC (para [0028] lines 3-4).

Regarding claim 17, Chen teaches that the metal bonding layer 124 is AuBe (para [0028], lines 14-15).

Regarding claim 19, the claim language is merely product by process and therefore does not structurally distinguish from Chen herein.

Regarding claim 21, Chen teaches that the first electrode 130 and the second electrode 122 are respectively an N type electrode and a P type electrode (para [0030], line 3 and para [0028], line 11).

having the first electrode and the second electrode being respectively a P type electrode and an N type electrode for the purpose of obtaining a specific application and design of a light emitting structure.

Response to Arguments

Applicant's arguments filed on 7/28/2005 have been fully considered but they are not persuasive.

With respect to claim 1, applicant argues Chen does not teach a metal bonding layer on the semiconductor structure. However, as shown in figure 6C of Chen, after bonding, the bonding metal layer 124 is on the semiconductor structure 104, 106, 108. Further, applicant argues Chen does not teach a transparent substrate formed on said metal bonding layer and bonded with the semiconductor structure under a bonding temperature ranged from 300C to 900C. However, Chen clearly teaches in figure 6C a transparent substrate 120 is formed on the metal bonding layer 124. Note the limitation "bonding temperature ranged from 300C to 900C" is merely product by process and therefore does not structurally distinguish from Chen.

With respect to claim 16, applicant argues substrate 100 in Sheu is a growing substrate, not a transparent substrate as claimed. However, Sheu teaches substrate 100 includes one of SiC and GaP, which is the same material being used to form the transparent substrate in the instant application (para [0021] of the instant application). As such, substrate 100 of Sheu is inherently transparent. Since SiC and GaP are

Art Unit: 2815

recognized in the art as equivalents, it would have been obvious to one of ordinary skill in the art to use either SiC or GaP to form a transparent substrate.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for

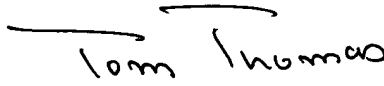
Art Unit: 2815

the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JN

September 22, 2005.


TOM THOMAS
SUPERVISORY PATENT EXAMINER